MARINE BIOLOGY IN THE UNITED STATES.

THERE has recently been issued the first Annual Report of the Marine Biological Laboratory at Wood's Holl, Mass. The Laboratory is an outgrowth of a smaller predecessor maintained at Annisquam, Mass., for six years, by the Woman's Education Association of Boston, in co-operation with the Boston Society of Natural History; and the locality where it is pitched is one which has been in especial favour with marine zoologists of the New World, from Alex. Agassiz downwards. The edifice is a small one (63 × 28 feet), two stories high, of plain but very substantial build. It has been especially designed for the purpose to which it is put, and there are eight private rooms available for the use of investigators. Conspicuous among the names of those chiefly concerned in its maintenance are those of persons known to be familiar with the workings of the leading biological laboratories abroad; and Dr. C. O. Whitman, of Milwaukee, has accepted the office of Honorary Director. It is thus manifest that, in the selection of those who are to control the working of their enterprise, the promoters have secured the services of those of their countrymen whose influence would be most conducive to a successful issue.

The Laboratory is regarded by the Director as a "first step towards the establishment of an ideal biological station, organized on a basis broad enough to represent all important features of the several types of laboratories hitherto known in Europe and America." In a very interesting opening address, the same gentleman lays it down as a tenet that "a biological station should be a purely scientific affair from beginning to end," and the spirit of his words appears to have entered into the very organization of the institution over which he presides. Competent investigators not requiring instruction are invited to carry on their researches free of charge, and a small fee is asked only of those whose work requires supervision; while, with a view to developing the resources of the country, provision is made for the conducting of short seven weeks' courses of instruction in marine zoology and microscopical technique. Arrangements are also to be made for the delivery of "occasional lectures, or informal accounts of results obtained in special lines of research carried on at the Laboratory."

The above-named short courses of instruction are no mere vacation ones, whereby the Laboratory would be in danger of conversion into a summer *rendezvous*, but recognized portions of a working scheme; and, in providing for them, our American brethren have taken a new and most important departure in the advance of biological education, and one upon which we ourselves might well act. To many of us it has long been obvious that our own methods of teaching elementary biology are being overstrained. The type-system, in which we justly glory, is being pushed to an extreme not dreamt of by its founders; but while some such method must always be relied upon for a first beginning, we stand in need of a supplementary system, whereby there may be assured to the advanced student a field of labour less restricted than that now largely adopted. We would have him brought face to face with unfamiliar forms of life—forms of which he might probably never have heard—and left to himself (competent assistance being accessible in case of emergency) to identify and to determine them. The student is, at present, nurtured on too great a regard for authority; he is taught to rely too fully upon his teacher, and his powers of independent judgment become thereby stunted; and, unless some means be taken to dispel this delusion, the systematic work of even the near future must suffer. We are of opinion that the remedy is to be found in some such action as that instituted by the officers of the Wood's Holl Laboratory. We need more field-work, and the advanced student should be compelled to supplement the special training which he now receives with, say, a two to three months' course at the sea-side. Many of our existing schools are already located in situations favourable to the requirements of the case, but their movements are so hampered by the demands of the narrow "syllabus" that little opportunity is left them for the development of their special resources. Setting these institutions aside, however, we believe that access to a fully equipped laboratory is not a *sine quâ non* for the fulfilment of that which we desire. It is true that "any enthusiastic young person who may unfold his umbrella on the sea-shore" cannot be said to have "opened a zoological station"; but it is none the less certain that a born biologist will pursue his calling even under a sunshade, and it should be one of the highest aims of our educational system to single him out. To this end, let the student found his own laboratory in a convenient room in some good locality; set him to collect, to identify, and to preserve; let him rely upon his ingenuity for the construction and arrangement of his accessories; give him ample opportunity to make the most of the resources of the surface-net; and leave the rest to nature. The student who, granted a previous sound elementary training, free of bias, would most readily rise to the emergencies of the case we picture, would be he to whom we would most confidently intrust the future development of our science; and it cannot be denied that our existing methods of training fall short as a sure means of securing him.

Our American brethren are content with humble beginnings. Their Laboratory is small, but it is managed as such an institution should be. We believe our dream to be indicative of a general want; and, should its realization ever come about, to the women of the United States will be due the honour of having inaugurated a recognized system of training such as, to us, seems most desirable for its attainment. Better this than empty glory in a costly edifice.

Young as is the Wood's Holl Laboratory, a record is published, without ostentation, of work commenced in five definite subjects, and efforts are being made to establish a scholarship fund in connection with the institution. The citizens of the United States are now striving by private enterprise to do, for the pure science of aquatic biology, that which their legislators have so nobly done for the fish industries. We heartily wish them success.

G. B. H.

NOTES.

THE next International Archæological Congress is to be held in Christiania in 1891. It was originally intended that it should be held in London. Dr. Ingvald Undseth, of Christiania, is the General Secretary.

MORE than 500 members will take part in the forthcoming Oriental Congress in Stockholm, among them being official delegates from Egypt, Persia, India, Siam, China, and Japan. Two famous Arabic scholars of Medina—Mahomed Mahmud and Mahomed Chingîtbî—will also be present.

THE programme of the second summer meeting of University Extension students and others, to be held in Oxford next month, is now published. The programme, as compared with last year's, shows one remarkable difference. The summer meeting of this year is to be divided into two parts, the first of which, lasting from Tuesday, July 30, to Friday, August 9, reproduces the main features of the meeting of last year—meetings, *conversaziones*, excursions, lectures and visits to libraries, museums, and so forth. On the list of lecturers appear the names of Prof. Max Müller, Sir Robert Ball, Mr. Herkomer, Mr. Lewis Morris, Prof. Henry Morley, Mr. W. J. Courthope, Mrs. Fawcett, Prof. Thorold Rogers, Prof. Pritchard, Prof. A. H. Green, Prof. S. R. Gardiner, Mr. Arthur Sidgwick, Mr. R. G. Moulton, and many others. The second part of the meeting, which is the special feature and new departure of this year, is to begin on Saturday morning, August 10, and end on Friday evening, August 30. This is intended to be a period of more serious and sustained study and instruction for those whose leisure and industry have not been exhausted during the previous ten days, as well as for those who may prefer three weeks of more quiet and systematic reading and lecturing. The lectures in this second part are arranged in connection with lectures of a more general character delivered in the first part. It is estimated that the total expense of attending the first part of the meeting need not exceed £5 for each person (including railway fare and price of ticket), and may be considerably less if several persons live together; while £10, it is estimated, may cover the expense of attending both parts of the meeting. The Secretary is Mr. W. A. S. Hewins, 35 Cornmarket Street, Oxford. The number of tickets is limited to 1200, of which about five-sixths have been already applied for.

SIR EDWARD WATKIN was the client for whom Mr. Perks bought the summit of Snowdon at Tokenhouse Yard last week. It is said that Sir Edward has intimated his intention of offering a site on the summit to the Royal Astronomical Society for purposes of an observatory similar to that on Ben Nevis.

ON Monday a deep-sea exploration party started from Kiel, on board the steamer *National*, for the Greenland coast, where they propose to carry on a series of submarine soundings and investigations. The expedition is directed by Prof. Hensen.

ACCORDING to the *Times of India*, Mr. Oldham, of the Geological Survey of India, who is at Simla at present, is to be deputed to Mergui, in Burmah, on geological work.

MR. ELLIOT, head of the Meteorological Department, has, according to the *Times of India*, reached Simla after a long and useful tour. He has arranged for the publication of a map of Bombay, showing the daily state of the weather on the coast, similar to that issued in Calcutta.

THE vexed and protracted question of a good zoological collection for Bombay is, after years of discussion, at last on the point of being settled. It came to the ears of the Governor, Lord Reay, that the terms on which the Victoria Gardens are held by the Municipality of Bombay were at the bottom of the whole difficulty. No charge for admission could be levied at any time without the express consent of the Government. But without the aid of fees it would be impossible to maintain, much less to establish, a really good collection. The Government thereupon intimated their willingness to see a moderate fee charged for admission on certain days in the week, and on June 17 the matter was brought before the Corporation, and the proposals of the Municipal Commissioner were accepted. Curiously enough, the *Times of India*, which brings this information, also contains a letter from Mr. H. B. Brady, F.R.S., from London, describing the present zoological collection of Bombay as "a few poor beasts wretchedly housed." But now that fees can be charged at the Victoria Gardens, the situation is entirely changed, and there is no reason why the Bombay zoological collection should not speedily equal the fine collection at Calcutta.

DR. FRANCIS DAY died on July 10 at his residence, Kenilworth House, Cheltenham. He was appointed to the Madras Establishment in 1852, and after taking part in the military operations then in progress at Burmah, for which he received the medal, he devoted himself exclusively to the study of fishes, and became Inspector-General of Fisheries in India. The results of his labours he presented in reports to the Government of India of 1865 to 1877, in numerous papers to scientific journals, and in the following general publications:—"The Fishes of Malabar," 1865; "The Fishes of India," 1868; "The Fishes of the Andaman and Nicobar Islands," &c., 1870; "The Fresh-water Fish and Fisheries of India and Burmah," 1873; "The Fishes of India," second edition, 1875-79; and "The Fishes of the Nilghiri Hills and the Wynaad," 1876. The Imperial Museum at Calcutta possesses his type collection of Indian fishes; and collections formed by him are in the Natural History Museums at Leyden, Berlin, Florence, and Sydney, and in the British Museum, to which he also sent his collection of Indian crabs. Dr. Day retired from the Madras Medical Staff in 1877. He then began the study of the fishes and fisheries of the United Kingdom, and in 1880-83 published "The Fishes of Great Britain and Ireland." He was created a Companion of the Order of the Indian Empire in 1885, and about the same time received the cross of the Order of the Crown of Italy.

ACCORDING to the *Colonies and India*, the Dunedin Acclimatization Society have solved one of the greatest problems in connection with the acclimatization of salmon. They have procured ova from fish reared from ova sent from this country. It is claimed that this has never before been done in any part of the world.

IN connection with a note by M. Leroy, in the *Comptes rendus* of June 17, M. Landerer pointed out, in a note read at the meeting of the Paris Academy of Sciences on July 8, that he was the first to describe the phenomenon of the decomposition of the image of the horizontal lines seen with the eye which remains closed during microscopic observations. M. Landerer offered two remarks in addition to his former statements: (1) although the effort made by the eye in microscopic vision appears to be of the same nature as the effort demanded by telescopic vision, the trouble caused to the closed eye is much more sensible in the former case than in the latter, no matter what the telescopic object may be. (2) The disposition which must be given to the eyes during microscopic vision involves the crossing of their optical axes, producing an effect like that of "strabism." This is proved by the fact that, in giving them this disposition, and then applying the eye to the ocular, one perceives the image distinctly. It is this simultaneous work of the two eyes that explains the trouble experienced by the eye which does not take part directly in the act of vision.

THE Reale Istituto Lombardo proposes as subject for the Cagnola Prize (2500 lire, and medal 500 lire) in 1889-90 ("ordinary" competition) the following:—Investigation of one of the (at present few) trisubstituted derivatives of benzol; their mutual relations, and relations to the bisubstituted derivatives to be studied, and facts ascertained which will throw light on the laws of their properties and constitution. Samples of new bodies to be furnished. The date is April 30, 1890. For the "extraordinary" competition (same value of prize), a physico-physiological monograph on one of the larger Lombardy lakes is invited. The research must be carried out according to the directions published by Prof. Forel, of Lausanne, in 1887 Date May 1, 1890. Thirdly, a similar prize is offered for discoveries on the cure of pellagra; or the nature of miasma and contagion; or the steering of balloons; or means of preventing the falsification of writing. Date December 31, 1889. Manuscripts (in French, Italian, or Latin) are to be sent, with sealed letter, to the Secretary of the Institute in Milan.

THE Transvaal Volksraad is reported to have placed £20,000 on the estimates for the current year, for the purpose of endowing the first University of the Republic.

ACCORDING to the Calcutta Correspondent of the *Times*, a herd of 100 wild elephants has been captured in Mysore by

Superintendent Sanderson. The same correspondent states that there were 6000 deaths by snake-bites in the North-West Provinces last year. In Madras, 10,096 cattle were killed by wild animals, and the loss of human life by snakes and wild animals was 1642.

IN a telegram from Tashkend, dated July 12, it is stated that a shock of earthquake had occurred at Djarkend, in the Government of Semiretchinsk, by which half the town was destroyed.

PROF. W. FÖRSTER, Director of the Berlin Observatory, states in the *Reichsanzeiger* that shortly before midnight on the 11th inst., undulatory motions were observed in two water balances pointing north and south in the Berlin Observatory. These motions, he believes, were a distant effect of the earthquake near Tashkend. Similar motions were observed in Berlin, Breslau, and Königsberg on August 2, 1885, and it is concluded that they were caused by an earthquake which, as was afterwards found, had taken place at Tashkend half an hour earlier.

A SLIGHT shock of earthquake was felt at Charleston, U.S.A., at 9 47 on the evening of July 11. The disturbance lasted three seconds, and was accompanied by slight subterranean rumblings. The direction was from north to south.

AT a recent meeting of the German Meteorological Society in Berlin, Dr. Lang, of Munich, read a paper on the velocity of propagation of thunderstorms in South Germany in the ten years 1879–88. This is, on an average, 38·4 kilometres per hour; but it has varied considerably from year to year, increasing in the years to 1884, and thereafter decreasing. To this corresponds a curious variation of van Bebber's fourth and fifth depression-paths: which lay in the north at the beginning of the period, then moved south to South Germany till 1884, after which they retired northwards. Hail frequency has varied in an opposite sense to the velocity; but the rapidly moving winter thunderstorms have most hail. The velocity is maximum in winter; it falls rapidly till May, slowly rising thereafter (with a second depression in September) till winter. The velocity is greatest in storms coming from the west. Dividing the region into four zones from north to south, there is a decrease in the velocity, at first slight, but getting very rapid on reaching the Alpine region. The velocity is greatest about midnight, least about midday. At the same meeting, thunderstorms and hail in Bavaria in 1880–88 were the subject of a paper by Dr. Horn. These phenomena in general correspond; both have a maximum early in July, but the hail has a second maximum, nearly as great, in May. Both phenomena show a pronounced day maximum about 3 to 4 (in winter about 2 to 3), and a minimum in the morning from 7 to 8. Dr. Horn said hail never fell in Bavaria without electric discharge, but Dr. Assmann maintained it did sometimes in Prussia.

WE have received from Mr. A. L. Rotch the observations made at the Blue Hill Meteorological Observatory in the year 1887. This Observatory, which was established in 1885, is now one of the best-equipped stations in the United States; it is situated in Norfolk County, Massachusetts, about 635 feet above the level of the sea, being the highest point within ten miles of the Atlantic coast from Maine to Florida, and commands an unbroken view of the horizon in every direction. The value of the station has been recognized by the Harvard College, and the present volume appears as vol. xx. Part 1, of the Annals of the Astronomical Observatory of that institution, which is about twelve miles distant. Arrangements have been made for the continuation of this new form of publication, and the ultimate consolidation of the two institutions is contemplated—a step that will insure a more complete discussion of the observations than has been possible hitherto. In addition to monthly summaries, the present volume contains hourly values of all the principal elements. The hourly observations of rainfall, cloud, (7h. a.m. to 11h. p.m.), and sunshine are especially valuable. The sunshine observations are given in a novel and convenient form, showing the amount, in tenths, for each hour. The appendixes contain interesting discussions on thermometer screens, and on the differences of temperature between the base and the summit, as well as tracings from the self-recording instruments illustrating special meteorological phenomena. We congratulate Mr. Rotch and his staff on the completeness of their valuable work.

AMONGST the many beneficial measures which have taken place in Mexico, during President Diaz's four years' administration, Sir Francis Denys, of the British Legation, Mexico, in his last report, mentions those for the study and preservation of ancient monuments and historical remains. An inspector has been appointed, the building for the National Museum improved, and various collections relating to natural history, as well as to archæology, have been added. An archæological map of the Republic has been made, and plans and photographs of the palaces of Mitla have been obtained. Explorations of the ruins of Xochicalco, and of the pyramids of Teotibuacan have been undertaken, many interesting discoveries rewarding the explorers of the latter. A wall, 360 metres long, 3 metres high, and 1 metre broad, has been constructed around the palaces of Mitla for the protection of these gigantic monuments. The Republic now possesses a fine public library, where ancient documents and a large collection of scientific and historical works are at the disposal of the student.

ABOUT fifty objects of various kinds from the early Iron Age—swords, axes, arrow-heads, &c.—have lately been excavated from a barrow at Hvideseid, in South-Eastern Norway.

AN ancient canoe, hollowed by fire from the trunk of a tree, has been discovered in a moss at Thorsager ("Thor's Field") in Jutland, 4 feet below the surface.

IN the Report, just issued, of the trustees of the South African Museum for the year 1888, reference is made to the unwelcome appearance in some number, in the entomological collections, of a pest very prevalent in Europe and elsewhere, but hitherto of comparatively rare occurrence in South Africa, viz. the minute neuropterous insects belonging to the genus *Psocus*, and commonly known to collectors as "mites." It is not improbable that the unusually wet weather of the latter half of the year favoured the multiplication of these destructive insects. Naphthaline has been found very serviceable as a check to their attacks.

WE notice the appearance of the second volume of the "Ornitographia Rossica," by Th. Pleske, published by the Russian Academy of Sciences. It contains a description of the *Sylviæ* of the Russian Empire. A new edition of N. Kaufman's "Flora of the Government of Moscow," has also been issued. This remarkable work, which is regarded as classical by Russian botanists, was out of print. It has been thoroughly revised, and may be considered the most trustworthy source of information as to the flora of Moscow and the central plateau of Russia.

THE third volume of the "Ethnography of the Caucasus," now being published at Tiflis, contains the researches of Baron Uslar relating to the Avarian language. This language is spread in Daghestan, over a territory which crosses the highlands from north to south, and separates the eastern group of the Daghestan languages from the western. It is used by most tribes of the highlands in their mutual relations. Although possessing in its alphabet a great number of consonants hardly distinguishable from one another by the untrained ear, it is said to be very agreeable on account of the excellent proportions between the consonants and the vowels in its words.

A FULL bibliography of Russian books and papers on mathematics and physical sciences since the earliest days of printing is being published at Moscow, by V. V. Bobynin. The first instalment of the second volume brings the work down to the year 1774.

IN the new number of *Harvard College Bulletin* Mr. W. H. Tillinghurst has the following note:—"It is believed that M. Chevreul reached a greater age than any other person who had received a degree from Harvard College, outliving by a year Judge Timothy Farrar (1767), born July 11, 1747, died February 21, 1849, at the age of 101 years, 7 months, 10 days, who received the degree of LL.D. in 1847 on the completion of his one hundredth year. Two graduates of American Colleges have outlived M. Chevreul. Rev. John Sawyer (Dartmouth, 1785), was born October 9, 1755, and died October 14, 1858, aged 103 years, 5 days. He received the degree of D.D. from Dartmouth in 1857, when 102 years of age. But the oldest College graduate in this country known to the writer was Nathan Birdseye (Yale, 1736), who was born August 19, 1714, and died January 28, 1818, aged 103 years, 5 months, 9 days."

SOME interesting facts concerning the "element" tellurium have been brought to light by Dr. Brauner, of Prague, during the course of a series of atomic weight determinations, an account of which is given in the July number of the Journal of the Chemical Society. A determination of the atomic weight of tellurium made by Berzelius in 1832 yielded the number 128·3, and a later one in 1857, by von Hauer, gave the value 127·9. Hence 128 has usually been accepted as the true atomic weight. The properties of tellurium, however, indicate that it belongs to the sulphur group of elements, and that its position in the periodic system lies between that of antimony, of atomic weight 120, and iodine, of atomic weight 127. But according to the above determinations the atomic weight of tellurium is higher than that of iodine. Hence we are obliged to admit one of two things: either that the atomic weight of pure elementary tellurium has been incorrectly determined, or that the periodic law of the elements, that grand natural generalization whose distinguished elaborator English chemists have recently been delighting to honour, breaks down in this particular case. In view of the overwhelming mass of experimental evidence which has now accumulated in support of this generalization, the latter assumption cannot for a moment be tolerated. The redetermination of Dr. Brauner becomes therefore of primary importance, and his results partake of the highest interest. The mode of procedure which afforded the most satisfactory results consisted in the analysis of tellurium tetrabromide, $TeBr_4$, purified in the most complete manner, by means of silver nitrate prepared from pure silver. The mean atomic weight from these experiments was found to be 127·61, the maximum being 127·63, and the minimum 127·59. Hence there can no longer be any doubt that the substance we term tellurium does possess a combining weight larger than that of iodine. Now comes the question: Is this substance pure elementary tellurium? If it is, then, as Dr. Brauner says, it is "the first element the properties of which are *not* a function of its atomic weight." Dr. Brauner, however, finds as the result of a process of fractionation that it is not pure tellurium, and that it consists of probably three elements, pure tellurium mixed with smaller quantities of two other elements of higher atomic weights; and he is at present engaged in studying the nature of these foreign substances, and in the endeavour to isolate pure tellurium itself. A few of the as yet unpublished results obtained in these latter researches were communicated personally by Dr. Brauner at the meeting of the Chemical Society on June 6, and among them the interesting fact was stated that one of the new elements is probably identical with Prof. Mendeleeff's recently predicted dwitellurium, of atomic weight 214, the other new constituent being an element closely allied to arsenic and antimony.

THE additions to the Zoological Society's Gardens during the past week include a Poë Honey-eater (*Prosthemadera novæ-zealandiæ*) from New Zealand, presented by Mr. Alfred M. Simon; two Razorbills (*Alca torda*), two Guillemots (*Lomvia troile*), British, presented by Mr. W. B. Roberts; a White-throated Monitor (*Varanus albogularis*) from South Africa, presented by Mr. H. L. Jones; a Macaque Monkey (*Macacus cynomolgus*) from India, two Argus Pheasants (*Argus giganteus* ♂ ♀) from Malacca, a Military Macaw (*Ara militaris*) from South America, deposited; an Indian Coucal (*Centropus rufipennis*) from India, two Diamond Snakes (*Morelia spilotes*) from New South Wales, received in exchange.

OUR ASTRONOMICAL COLUMN.

COMET 1889 *d* (BROOKS, JULY 6).—The comet reported in NATURE of July 11 (p. 255) as having been discovered by Swift on July 5 appears to have been an observation of Barnard's comet of 1888 September 2, there having been an error in the transmitted position. The position should have been:—

R.A. 21h. 24m. 20s. N.P.D. 89° 11′.

A faint comet was discovered by Brooks on July 6.

July 6·790 G.M.T.: R.A. 23h. 44m. 8s.; N.P.D. 99° 9′. A rough approximation by Brooks.

July 8·9561 G.M.T.; R.A. 23° 46′ 26″; N.P.D. 98° 55′ 57″. Observation by Barnard. Comet, slightly elongated, 1′ in diameter, 11 mag. or fainter.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1889 JULY 21–27.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on July 21

Sun rises, 4h. 10m.; souths, 12h. 6m. 8·4s.; daily increase of southing, 2·8s.; sets, 20h. 1m.: right asc. on meridian, 8h. 3·9m.; decl. 20° 24′ N. Sidereal Time at Sunset, 16h. 0m.

Moon (two days after Last Quarter) rises, 23h. 54m.*; souths, 7h. 0m.; sets, 14h. 19m.: right asc. on meridian, 2h. 56·6m.; decl. 12° 12′ N.

Planet.	Rises.	Souths.	Sets.	Right asc. and declination on meridian.	
	h. m.	h. m.	h. m.	h. m.	° ′
Mercury..	2 42 ...	10 51 ...	19 0 ...	6 49·0 ...	22 23 N.
Venus.....	1 4 ...	8 53 ...	16 42 ...	4 49·9 ...	19 22 N.
Mars......	3 13 ...	11 26 ...	19 39 ...	7 23·5 ...	23 0 N.
Jupiter....	18 7 ...	22 1 ...	1 55*...	18 0·9 ...	23 21 S.
Saturn....	6 9 ...	13 35 ...	21 1 ...	9 33·3 ...	15 43 N.
Uranus...	11 39 ...	17 9 ...	22 39 ...	13 8·0 ...	6 34 S.
Neptune..	0 23 ...	8 12 ..	16 1 ...	4 9·1 ...	19 22 N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

Variable Stars.

Star.	R.A.	Decl.			
	h. m.	° ′		h. m.	
δ Libræ	14 55·1 ...	8 5 S. ...	July 25,	2 57	*m*
U Coronæ	15 13·7 ...	32 3 N. ...	,, 27,	2 38	*m*
U Herculis	16 20·9 ...	19 9 N. ...	,, 22,		*m*
U Ophiuchi	17 10·9 ...	1 20 N. ...	,, 23,	22 31	*m*
X Sagittarii... ...	17 40·6 ..	27 47 S. ...	,, 21,	23 0	*M*
W Sagittarii ...	17 57·9 ...	29 35 S. ...	,, 23,	23 0	*M*
U Sagittarii... ...	18 25·6 ...	19 12 S. ...	,, 26,	1 0	*m*
R Scuti	18 41·6 ...	5 50 S. ...	,, 23,		*M*
β Lyræ...	18 46·0 ...	33 14 N. ...	,, 24,	23 30	*M*
R Lyræ	18 52·0 ...	43 48 N. ...	,, 21,		*M*
U Aquilæ	19 23·4 ...	7 16 S. ...	,, 24,	21 0	*m*
η Aquilæ	19 46·8 ...	0 43 N. ...	,, 26,	23 0	*M*
S Delphini	20 38·0 ...	16 41 N. ...	,, 26,		*M*
X Cygni	20 39·1 ...	35 11 N. ...	,, 24,	2 0	*M*
T Vulpeculæ ...	20 46·8 ...	27 50 N. ...	,, 21,	23 0	*m*
δ Cephei	22 25·1 ...	57 51 N. ...	,, 23,	0 0	*m*

M signifies maximum; *m* minimum.